Small Business Innovation Research/Small Business Tech Transfer

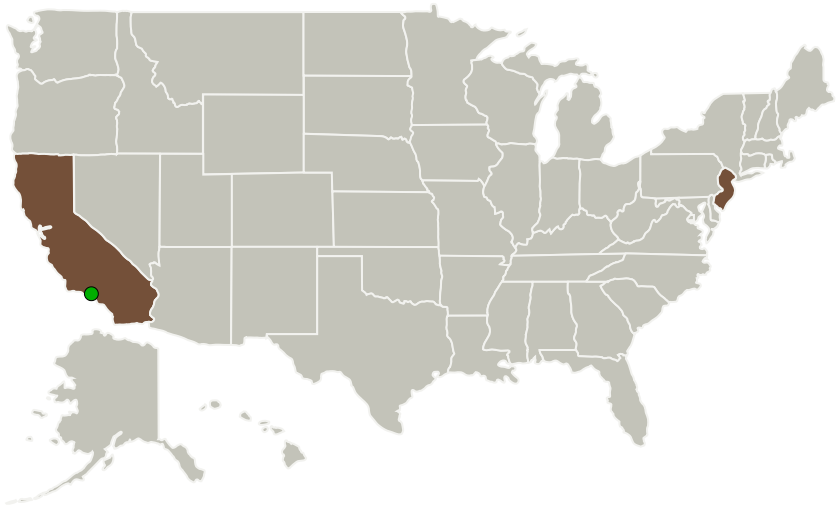
Unique, Voltammetric Electrochemical Sensors for Organic Contaminants, with Excellent Discrimination, Based on Conducting Polymer-, Aptamer- and Other-Functionalized Sensing Electrodes, Phase I

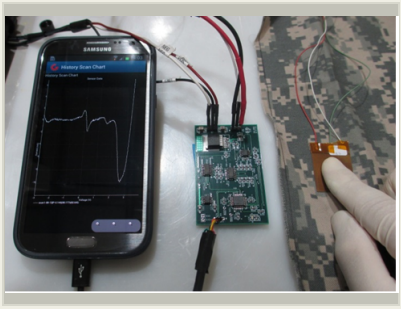
Completed Technology Project (2017 - 2017)

Project Introduction

In ongoing and recent prior work for the Army, this firm has developed a unique, patented technology for voltammetric electrochemical detection of toxic gases, chemical warfare agents, proteins such as Thrombin and Fibrinogen and other analytes. Features include: (1) Voltammetric detection yielding analyte "fingerprints" much like an IR spectrum for high discrimination. (2) 3-module construction (disposable sensing element; tiny Microcontroller; Android cellphone control interface). (3) Small (1cmX1cmX1mm), inexpensive ($250), portable, thin, flexible, lightweight (2g), body-wearable, environmentally durable construction. (4) Operating temperature -40 to +80 C. (5) Detection times <5s. (6) Power 10 micro-W/cm^2. (7) Self-calibrating. The proposed work will further develop these for sensing contaminants of interest. It will further develop, optimize sensor, Microcontroller, Android interface, data-analysis algorithms, and sensor Form Factor, all specifically for the NASA application. It will include environmental durability, shelf-life and other tests. Final design and methods of manufacture will be arrived at and commercialization initiated.

Primary U.S. Work Locations and Key Partners





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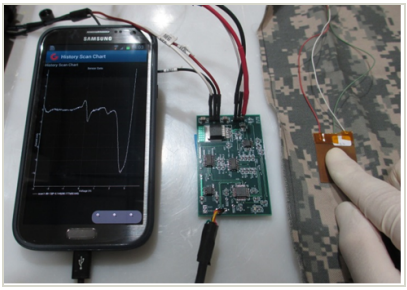
Completed Technology Project (2017 - 2017)

Organizations Performing Work	Role	Type	Location
Ashwin-Ushas Corp, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Holmdel, New Jersey
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	New Jersey

Images



Briefing Chart Image
Unique, Voltammetric Electrochemical Sensors for Organic Contaminants, with Excellent Discrimination, Based on Conducting Polymer-, Aptamer- and Other-Functionalized Sensing Electrodes, Phase I Briefing Chart Image
(https://techport.nasa.gov/image/132750)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Ashwin-Ushas Corp, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Prasanna Chandrasekhar

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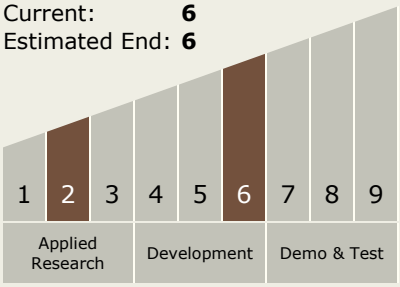
Completed Technology Project (2017 - 2017)

Technology Maturity (TRL)

Start: **2**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.6 Robotics Integration
    - TX04.6.2 Modeling and Simulation for Robots

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System